Wisconsin
Department of Commerce

Evaluation # 200268-I (Replaces 200014-I)

Safety & Buildings Division
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Wisconsin
Building Products Evaluation

Material	PolyMaster R501 Foam Plastic Insulation
Manufacturer	PolyMaster, Inc. 10523 Lexington Drive Knoxville, TN 37932

SCOPE OF EVALUATION

GENERAL: This report evaluates the use of R501 cellular plastic (a second-generation amino-plast polymer) insulation, manufactured by PolyMaster, Inc., evaluated as a foamed-in-place insulation for brick and block cavities, concrete block cavities, pre-cast hollow core block and plank, and new frame construction. The R501 foamed-in-place cellular plastic insulation was evaluated in accordance with the fire safety requirements for foam plastic, and thermal performance, for the codes listed below.

This review includes the cited **Comm** code requirements below in accordance with the current **Wisconsin Uniform Dwelling Code (UDC), for 1- & 2-family dwellings:**

- **Foam Plastic:** The PolyMaster R501 foamed-in-place cellular plastic (amino-plast) insulation was evaluated in accordance with the fire safety requirements of **s. Comm 21.11**.
- **Thermal Performance:** The PolyMaster R501 foamed-in-place cellular plastic (amino-plast) insulation was evaluated in accordance with the thermal performance requirements of **Subchapter VI, ss. Comm 22.20**, **22.21**, **22.23**, **22.25**, **22.27**, **22.28**, and **22.31**. **Note** see **LIMITATIONS OF APPROVAL** section.

This review includes the cited **International Building Code (IBC)** requirements below in accordance with the current **Wisconsin Amended IBC Code:**

- **Foam Plastic:** The PolyMaster R501 foamed-in-place cellular plastic (amino-plast) insulation was evaluated in accordance with the fire safety requirements of **ss. IBC 2603.1**, **2603.2**, **2603.3** and **s. IBC 2603.4**.

- **Thermal Performance:** The PolyMaster R501 foamed-in-place cellular plastic (amino-plast) insulation was evaluated in accordance with the thermal performance requirements of **s. Comm 63.1018(2)(a)1.**, **(c)**. **Note** see **LIMITATIONS OF APPROVAL** section.

DESCRIPTION AND USE

PolyMaster R501 foam insulation is a second-generation amino-plast polymer that produces a non-toxic and odor-free material. The foaming process incorporates a two-component system consisting of a solid water-soluble plastic resin and an aqueous based foaming agent/catalyst. Compressed air or nitrogen is used to generate the dense closed-cell foam, physically coated with the plastic resin.

PolyMaster R501 foam insulation is installed from the top in the cores or cavities of concrete block walls during construction, and can be injected into a wall cavity (drywall, frame, or brick), through holes. Walls of existing buildings or new construction may be insulated through holes drilled in masonry joints or through the block at cores.

PolyMaster R501 foam, formed by mixing resin and catalyst components and air. Setting takes place 10 to 30 seconds after the foam leaves the applicator gun. Initial drying requires 24 to 48 hours. Final full curing takes from 2 to 4 weeks, depending on ambient temperature and humidity.

TESTS AND RESULTS

Fire tests were conducted on a concrete-masonry block wall with the cavities filled with PolyMaster R501 foam in accordance with ASTM E119. Non load-bearing wall assemblies constructed of 2-hour rated 12 x 8 x 16-inch masonry block will have a 2-3/4-hour fire-resistive rating when the cores are filled with PolyMaster R501 foam as described in Commercial Testing Company's Report Number 100005, Test Number 2587-4451.

Tests for surface-burning characteristics for PolyMaster R501 foam were conducted in accordance with ASTM E84. The flame spread index was determined to be 25 and the smoke-developed value was determined to be 40.

A thermal conductivity test for was performed in accordance with ASTM C518. The results were as follows: the thermal conductivity of PolyMaster R501 foam is 0.224 Btu-in./hr./ft.^{2}/°F. The thermal resistance, R-value is 9.80, and the thermal resistance per inch is 4.08.

LIMITATIONS OF APPROVAL

General: PolyMaster R501 foam is approved for installation in the cores of concrete-block walls, in the cavities between block and brick or double-brick walls and in precast panels.

PolyMaster R501 foam shall be installed by licensed, certified PolyMaster dealers in accordance with the manufacturer's recommendations.

PolyMaster R501 foam shall not be used where temperatures exceeding 190°F are present for prolonged periods of time.

PolyMaster R501 foam shall not be used to support compressive loads and shall not be used for flotation or overhead applications.

The **Comm** limitation requirements below are in accordance with the current **Wisconsin Uniform Dwelling Code (UDC), for 1- & 2-family dwellings:**

- **Foam Plastic:** The PolyMaster R501 foamed-in-place cellular plastic (amino-plast) insulation shall be separated from the building interior with a thermal barrier as required by **s. Comm 21.11 (1)**.
- **Thermal Performance:** The PolyMaster R501 foamed-in-place cellular plastic (amino-plast) insulation shall meet the thermal performance requirements of **Subchapter VI, ss. Comm 22.20**, **22.21**, **22.23**, **22.25**, **22.27**, **22.28**, and **22.31**. Calculations shall be signed, sealed and submitted in accordance with **s. Comm 22.31**.

The **IBC** limitations below are in accordance with the current **Wisconsin Amended IBC 2000 Code:**

- **Foam Plastic:** The PolyMaster R501 foamed-in-place cellular plastic (amino-plast) insulation shall be separated from the building interior with a thermal barrier as required by **s. IBC 2603.4**.
- **Thermal Performance:** The PolyMaster R501 foamed-in-place cellular plastic (amino-plast) insulation shall meet the thermal performance requirements of **s. Comm 63.1018(2)(a)1.**, and **(c)**. Calculations shall be signed, sealed and submitted in accordance with **s. Comm 63.1019**.

This approval will be valid through December 31, 2007, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Building Product Evaluation number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Revision Date:
Approval Date: March 11, 2003 By: _____

Lee E. Finley, Jr.
Product & Material Review
Integrated Services Bureau

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